PATENTING SOFTWARE

by RICHARD POYNDER (2001)

The patenting of software is growing dramatically, particularly in the US . This trend raises new threats for the software industry. It also brings new opportunities. Yet many UK companies are unaware of this, or do not even know that software is patentable in many circumstances.

The Department of Trade and Industry and CSSA have, therefore, commissioned a briefing document on the topic. This covers:

- *New threats*

The patenting of software introduces a number of new threats for UK companies. Not only could they find themselves excluded from export markets, but foreign companies could be patenting software techniques in the UK that could exclude them from their home market too. How should UK companies respond to this? What can be done to minimise the risks?

- *New opportunities*

Software patents also offer new opportunities. By obtaining patents UK companies could become the ones to block competitors from their market, or earn substantial royalty fees. Should software companies be seeking to patent their software? What are the pros and cons?

- *Heated debate*

The patenting of software has sparked a heated debate. The international situation is also undergoing change, and remains uncertain — not least in Europe . What issues are raised by software patenting? How is the situation likely to develop in the future?

- *Smaller companies*

Small and Medium Enterprises (SMEs) may be particularly vulnerable to these developments. What can they do to avoid the threats? How can they exploit the new opportunities?

- *IPR strategy is vital*

Given the increasing use of intellectual property for competitive advantage, it has become vital for software companies to agree a corporate Intellectual Property Rights (IPR) strategy. Why is this important? What implications does the rise of software patenting have for such a strategy?

- *Patent basics*

Many companies remain oblivious to the patent system, or feel that it is too complex to understand — putting them at a disadvantage to those who do understand it. How do you apply for a patent? What are the costs, and who can help?

The software industry faces a significant new challenge today — in the form of an escalating patent arms race. But this development also brings with it the potential for UK software companies to exploit the situation to significant advantage.

The challenge

Many will be aware of the controversial US patent granted to Amazon.com for its 1-Click ordering method. What they may not realise is that Amazon's patent is only one of a growing tide of software-related patents now being granted in America .

Moreover, this trend has spread to Europe, which means that any UK software company unaware of the development could find itself blocked from new markets, or even restricted in its existing markets.

Suppose, for instance, that your company had developed a new software-implemented technological innovation, and you had not patented the technology, but a competitor had. How would you feel if that competitor then demanded that you pay royalties to use the technology?

Worse, what if your competitor decided it wanted to stop you from using the technology all together, and obtained a court injunction that required you to cease trading until the matter had been heard by the courts?

Suppose you were then subsequently ordered to pay hundreds of thousand of pounds in damages for infringing your competitor's patent — even though you had independently come up with the same invention?

This is the challenge software companies now face. What is the opportunity?

The opportunity

Suppose *you* had patented the above invention? In such circumstances you could be in a very powerful position. You could be the one to block your competitors from the market; or generate substantial new revenue streams from licensing the technology.

Patents have other benefits too. They can, for instance, be used as leverage to gain admittance to markets that would otherwise be unavailable to you — by means of cross-licensing with competitors. You could also patent your inventions in foreign markets and then sell the rights to a local company.

In short, patents can be bought and sold like any other asset, and investing in them can pay dividends.

As we shall see later, they can also provide important collateral for SMEs when seeking funding, or as a way of ensuring a seat at negotiations with much larger players.

The point to stress is that as their competitors make increasing use of the patent system software companies will have to make a conscious decision over how to react. That decision needs to be made in the context of an articulated Intellectual Property Rights (IPR) strategy.

The aim of this document is to help you formulate that strategy. Let's start with some background information.

The knowledge economy

Why the current explosion in the patenting of software? Because in today's knowledge economy companies are attaching far greater importance to their intellectual assets, including their know-how, expertise and innovations.

This is not surprising: increasingly the creation and exploitation of intellectual property is seen as one of the most effective ways of gaining a competitive edge.

For this reason software companies are becoming far more protective of their intellectual property rights. While historically this was mainly done by means of copyright — along with trade marks and trade secrets — recent years have seen a growing trend to seek patent protection too.

Nevertheless, many UK software developers are unaware that patent protection may be available to them, particularly smaller companies, putting them at a disadvantage. As we shall see, there are good reasons for this.

Patents versus copyright

Why is copyright no longer seen to be sufficient? Because while copyright is a useful tool for preventing others from copying, or 'ripping-off', a computer program, it does not protect the inventive ideas embodied within the software — just the expression of those ideas. Patents, by contrast, protect the inventive concepts underlying the creation of a new program.

Proving infringement of copyright means not only establishing that a third party is selling an identical or similar program, but that they have indeed copied it directly from you.

Claiming infringement of a patent, on the other hand, merely requires demonstrating that a competitor's program matches the invention claimed in your patent, even if they had never seen your program, or the patent.

Additionally, a third party could be deemed to have infringed your patent even where they had independently come up with the same inventive step — so long as you had patented the inventive step and they had not.

That said, copyright has a number of advantages — not least that it is now an accepted tool for preventing infringement around the world. This, as we shall see, is not currently the case with patents.

Moreover, since copyright arises automatically at the instant of creation there is generally no requirement to register copyrighted works (although it may be necessary in some jurisdictions), so it is a cheaper form of protection than a patent. Copyright also has a longer lifetime (70 years after the death of the creator).

It should also be noted that the patenting of software is a controversial topic, and has become the focus of a heated debate in the US .

Last year this debate spread to Europe , leading the EC to initiate a consultation process, aimed at seeking industry views on the desirability and nature of software patents. A parallel process has also been undertaken by the UK government, following from earlier consultations on this issue in 1994 and 1998.

So what are the issues raised by the patenting of software, and what does it mean for UK-based software companies?

Trend begins in the US

During its first 30 years the software industry rarely attempted to patent software inventions, if only because many patent offices were unsympathetic to the proposition that software was patentable subject matter. However, following the dramatic growth of the software industry in the 1970s and 80s growing pressure developed from US software companies to change this policy.

Eventually, in 1981, a landmark Supreme Court decision changed the established US case law by holding that at least some software could be patented [1]. Subsequent cases have further broadened the scope of what is patentable.

Nevertheless, the change in the US position has been highly contentious, particularly in the wake of a further legal decision, in 1998, when the US Court of Appeals for the Federal Circuit ruled that business methods could also be patented[2]. In many cases these business methods are based on software.

In the wake of these decisions a growing tide of software patents are being issued. Microsoft alone has been granted around 1,400, and IBM a formidable 6,000.

More controversially, large numbers of business method patents are being granted in the US for a wide range of e-commerce and web-based technologies. Many of these, argue critics, lack novelty, and raise worrying anti-competitive issues.

Amongst other things, patents have been issued on electronic shopping carts, methods for selling music over the internet, and web-based auction techniques.

Ambiguity in Europe

While the debate in Europe is becoming equally fierce, the situation is somewhat different. It is also more ambiguous.

When the European Patent Convention (EPC) was signed by member states in 1973[3], both software and business methods were specifically excluded from patentability under Article 52(2). The subsequent UK Patents Act 1977 similarly excludes them[4].

For this reason until recently many people in the software industry believed that neither software nor business methods could be patented under the EPC — although paradoxically the European Patent Office estimates that it has granted some 20,000 software-related patents in recent years, and received around 500 applications for business method patents in 1999 alone.

In the UK , the Patent Office estimates that around 15% of the patents it grants today are software-related.

While this may appear to be a contradiction, it is merely a reflection of an ambiguity in the wording of the EPC. Thus while Article 52(2) of the European Patent Convention (EPC) excludes both software and business methods from patentability, the subsequent paragraph — Article 52(3) — qualifies this by stating that the excluded items are banned "only to the extent" that a patent application relates to this subject matter or these activities *as such*.

European patent authorities, therefore, have concluded that, while software and business methods *per se* are excluded from patentability, they are not necessarily excluded if they introduce a technological innovation. So while ideas for the plot of a computer game, even if expressed in terms of program steps, are not patentable, a program for a new machine tool may well be.

The technical effect

This ambiguity arose because the authors of the EPC were writing at a time when it would have been hard to predict the huge impact that the software industry was destined to have. So the technological innovation distinction has been forged out of a pragmatic realisation that software is revolutionising industrial activity.

The seeds of the current European approach lie in a 1987 decision by the EPO Technical Board of Appeal[5], which ruled that a patent could be granted to Vicom Systems for a method of digitally processing images using a computer.

Although the examiners had originally refused Vicom's application on the grounds that it was a computer program, the Board of Appeal concluded that while software *per se* is excluded from patentability, an invention implemented by means of a computer program may be patentable, so long as the technical aspect of that invention represents an inventive step previously unknown. In doing so they paved the way for what has become known as the requirement for a 'technical effect'.

While the scope and nature of this so-called technical effect has been further refined by case law, it is now quite clear that both the European Patent Office (EPO) and all EPC national patent offices (including the UK Patent Office) have a duty, when examining software-related inventions, to establish whether the software in question brings about a new technical effect that goes beyond the normal physical interaction between the program and the hardware represented by the computer itself — either through the introduction of a technical improvement to the running of the computer itself, or to an attached device.

In the presence of a clear technical effect then — so long as it also meets the other requirements for patentability of being new, non obvious, and susceptible to industrial application — the invention is patentable.

What does this mean in practice? It means that a technical effect can take place either within the computer itself — making, say, more effective use of the computer's memory, or other resources, and thus enabling the hardware represented by the computer itself to work in a technically improved way; or it can be external to the computer, by increasing, say, the efficiency with which an attached device — such as a robotic arm — can be used.

To understand the logic at work here it is helpful to appreciate that patents evolved in manufacturing industry. As such, there has always been a requirement that they be restricted to inventions capable of industrial application.

Consequently, in considering software and business method patent applications the EPO has set itself the task of always looking for "a technical solution to a problem".

National differences

In the US , by contrast, there is no statutory exclusion for patenting software or business methods. Nor are there any limiting requirements similar to Article 52(2).

As such, patent protection is available in America for any new and useful process, machine, manufacture or composition of matter, or any new and useful improvement of these. The claimed invention as a whole must also accomplish a practical application which produces a "useful, concrete and tangible result."

It should be added that since national patent offices are bound by the decisions of local courts, some small discrepancies have over time also developed between the EPO and national jurisdictions within Europe .

In the UK , for instance, if a patent is deemed to be a mental act — another of the exclusions in Article 52(2) — it is not patentable, even where there is a technical contribution.

As part of the larger task of re-examining and defining the patentability of software in Europe , therefore, the current EC consultation process is also focused on harmonising patentability rules within the European Community.

There are, however, differences of opinion about the form that this harmonisation should take. Advocates for a liberal approach, for instance, argue that it is now time for Europe to adopt the broader rules of the US system.

Others believe that even the more demanding requirements of current European practice are not sufficient. The patenting of software and business methods, they insist, should be outlawed entirely, even where a technical effect can be demonstrated.

Nevertheless, an important point to bear in mind is that — contrary to popular opinion — it is today often possible to patent software in the UK , as well as the rest of Europe .

Let's look more closely at the arguments for and against patenting software.

The case for software patents

Advocates for extending the patent system maintain that the software industry is no different to any other. In fact, they add, the current debate has been played out at the birth of every new industry.

A hundred years ago it was questioned whether agricultural inventions should be protected, on the grounds that agriculture was not an industry. Twenty years ago, it was argued that to grant some biochemical patents would be unethical. And today the biotechnology industry finds itself as the centre of the so-called "patenting of life" controversy.

Like every new industry, this view says, the software industry will eventually be absorbed by the patent system. If it is not, then the incentive to innovate will dry up, and the growth of the new economy will grind to a halt.

One factor that gives additional weight to this view is that as software has taken on a wider role in industrial processes it has increasingly been viewed as a cheaper, more efficient, way of doing things that would otherwise have to be done in hardware.

Today, for instance, an increasing number of inventions in mechanics and electronics take place in software. But if software cannot be patented in situations where it is being used to replace hardware, then the resultant inventions may be denied comparable protection to that available for hardware inventions intended to achieve the same effect.

This raises the question: why should it be possible to patent inventions built in hardware, but deny patentability to software inventions that arrive at the same inventive step — purely because the invention utilises software? After all, normally the choice of whether to implement a technical idea in pure hardware, pure software, or a mixture of hardware and software, is just an economic one, and the patentability of the underlying invention should not perhaps depend on which choice is made.

One concern is that if developers are compelled to opt for the more expensive hardware route in order to protect their intellectual property, it may retard innovation.

There are also fears that as national economies jostle for competitive advantage Europe could find itself at a disadvantage in the constant battle for inward investment. IBM, for instance, has indicated that it will look more favourably on patent-friendly jurisdictions when considering where to locate its R&D facilities.

Patent advocates also maintain that when, in 1995, Europe signed the World Trade Organisation administered Trade-Related aspects of Intellectual Property (TRIPS) — intended to harmonise intellectual property laws around the world — it accepted the principle that both software and business methods are patentable.

For this reason Europe was obligated to amend Article 52(1), to include similar wording to that in TRIPS — namely that "... patents shall be available for any inventions, in all fields of technology, provided they are new, involve an inventive step and are capable of industrial application." This was agreed at a Diplomatic Conference in Munich in November 2000, and will come into force later in 2001.

Wording, it should be noted, closely matching the current US model.

The case against software patents

Critics, however, argue that software is different, and that patents are inappropriate, even where it can be shown that there is a technical effect. Besides, they add, there is currently no satisfactory definition of what constitutes a technical effect, leading to a worrying lack of transparency over what is and is not patentable.

They also point out that if the software industry flourished for 30 years without the need to patent, there is no reason to believe that patents are necessary today. In fact, they add, it is more likely that the introduction of software patents would slow down today's rapid development of the software industry, and impact negatively on the growth of the internet economy too.

Moreover, they insist, providing a 20-year monopoly on software, whose life expectancy can sometimes be measured in months rather than years, is a nonsense. Software companies would be far better served putting all their efforts into achieving rapid time-to-market and 'first mover' advantages.

Some of the more vociferous arguments against software patenting come from the Open Source community, which believes that patents are not only inappropriate to the development of software, but could eventually destroy their movement entirely.

Since their central philosophy is that the source code of computer programs should be freely available for others to modify and improve, it is axiomatic to Open Source advocates that if this source code is increasingly privatised and ring-fenced with patents, then the collaborative efforts that have made the movement so successful — and allowed amongst other things the hugely popular Linux operating system and Apache web server to flourish — will prove impossible to maintain.

They also argue that, since software development is a 'logical' process, a great deal of independent reinvention inevitably takes place. In other words, not only does writing software involve solving a multitude of problems, but it leads to the kind of solutions that will often be independently arrived at by other programmers tackling the same problems.

To stimulate a constant rush to the door of the patent office in order to be the first to patent solutions to simple logical problems, they suggest, was never the aim of the patent system.

Business method patents

As previously stated, the growth of the internet, and especially e-commerce, has also given rise to a growing trend for patenting software-implemented business methods. This has attracted far more virulent criticism. Even large software companies like Microsoft and IBM have expressed concern.

Many point out, for instance, that innovation in business methods is an inevitable feature of competition, whether implemented in software or not, as companies strive for competitive advantage. Since the patent system was designed to promote innovation where it might not otherwise occur, they say, providing patents on business methods is superfluous.

Moreover, they add, since the copying of business methods tends to benefit consumers it should be encouraged rather than discouraged. Additionally, patents for business methods can be very wide, giving rise to monopoly concerns.

In short, many fear that to grant patents in this area would reduce consumer choice, and militate against the social benefits that the patent system was designed to encourage (see *The Patent Bargain* below).

In Europe the number of software-implemented business method patents being granted is limited by the technical effect test. In the US , however, broader patentability rules mean that a significant number of software-implemented e-commerce patents incorporating business methods are issuing.

In 2000 around 900 business method patents were granted by the United States Patent and Trademark Office (USPTO) in the financial area alone. And there were nearly 8,000 new applications in this area last year.

For European companies looking to sell software over the internet there are obvious implications here.

No patent has attracted more virulent and widespread criticism than Amazon.com's 1-Click patent, granted in September 1999. Critics argue that it is now possible in the US to take any known business method from the real world, build the process in software, apply that process to the internet, and then obtain a patent on it — leading to a growing number of 'bad' patents.

This is disputed by the USPTO, which argues that e-commerce patents would only be granted on business methods that were truly novel.

Bad patents

Novelty in this area, however, is a contentious topic. In fact, many critics argue that the current problem in the US stems not from its liberal patent rules, but from the failure of the USPTO to examine software and business method patents with sufficient thoroughness. The result, they say, is that a lot of bad patents are being granted.

Certainly patent offices have struggled to recruit patent examiners sufficiently knowledgeable about software. They also face a serious shortage of 'prior art' with which to judge the novelty of software and business method patent applications.

This is because when assessing the novelty of a patent application examiners normally rely heavily on previous patent applications. However, as there were no patents granted on software during its early development (when most of the ground breaking work was done) this resource is unavailable to them.

The consequences of this shortage were clearly evidenced in 1993, when Compton 's New Media, a US-based multimedia company, startled the audience of a Las Vegas computer convention by announcing that it had been awarded a US patent covering the search technology for running computer-based multimedia presentations.

As a result, it added, any company selling multimedia products in the US would have to pay between 1 to 3% royalty on every item it sold.

A storm of protest ensued — concluding with the announcement from the US Patent and Trademark Office a year later that after re-examination of the claim it had decided to reverse its earlier decision.

Unsurprisingly, many companies are concerned not only that they may find themselves bombarded with royalty claims for patents whose validity could only be effectively challenged by means of expensive litigation, but that if they were to invest in their own patents they could subsequently find them revoked if they tried to enforce them.

However, there are reasons for believing that the issue of bad patents is a short-term problem. Over time, if more and more software is patented, the ensuing patent documents will gradually create a pool of prior art against which future applications can be tested.

And in the short-term, patent offices have begun to extend the range of non-patent prior art databases available to them, and to recruit more specialist examiners.

Patents and smaller companies

Without doubt today's concerns over the patenting of software and business methods present the greatest challenge to Small and Medium Enterprises (SMEs). For them the costs of acquiring patents represents a more significant investment than it does for larger companies. And with their limited financial resources, they are more threatened by potential infringement suits.

Moreover, since a patent's value depends upon the willingness and ability of the patent owner to enforce it through the courts, many believe that SMEs working in the software industry are significantly disadvantaged by the growing trend to patent software.

The fear is that even if SMEs obtain patents they may not have the wherewithal to litigate against larger competitors. There is also concern that by means of their extensive patent portfolios, larger players will be able to ride roughshod over smaller competitors.

The critical question is whether patents provide larger companies with the power to crush smaller players, or whether they actually level the playing field for SMEs.

It is worth noting here that in 1994 a small software company called Stac Electronics successfully pursued an infringement action against Microsoft, resulting in the software giant being ordered by a California court to pay Stac $120m in damages for infringing its data compression program, Stacker.

Nevertheless, there is ample evidence that small companies can experience real difficulties when their patents are infringed. AllVoice Computing, a small Devon-based software company, for instance, has faced considerable difficulties enforcing its

US patent for speech recognition technology. More than two years after applying for an injunction in US courts to stop a competitor infringing its patent it still awaits a decision. Not many SMEs can afford to fund such prolonged litigation.

However, recent years have seen a growth of patent litigation insurance policies, many designed specifically to meet the needs of SMEs. There is also an increasing number of US legal firms specialising in intellectual property now offering their services on a contingency basis. It is hoped that such support mechanisms will help to level the playing field.

For smaller companies preferring to offload the financial responsibilities of having to defend their patents, there are always plenty of larger deep-pocketed companies prepared to pay for valuable intellectual property.

However, smaller companies looking for venture capital, or planning to go public in the future, should bear in mind that patents are increasingly viewed as an important asset. One of the major factors venture capitalists will consider when approached for funding nowadays is the existence of ‘defensible technological advantage”.

Amongst other things, this means that the VC company will be looking for patent ownership, or at least patent applications — usually both in their home country and, increasingly, in the US . Today many venture capitalists focused on the hi-tech and internet industries will not even entertain funding a company that does not have its core technology patented.

Japan and the Pacific Rim

As we have seen, there is some discrepancy between the US and Europe over the patenting of software and business methods. But what is the situation in Japan and the Pacific Rim ?

In Japan , apart from the universal requirements for novelty and non-obviousness, patents can be granted on anything that is “a creation of technical ideas utilising natural laws.”

So far as software and business method patents are concerned, this means that patents can be granted where an invention is achieved through the concrete use of hardware resources.

Thus a computer-implemented business method, or computer-implemented process — so long as it is implemented using a computer concretely, and even where the data manipulated may be purely financial data — would pass Japan’s patent eligibility standards.

In practice, then, although the Japanese patent office will — like European patent offices — look for an element of technical effect, the bar on the patentability of software and business methods is lower than in Europe, but higher than in the US.

The gap between the practice of the USPTO and the Japanese Patent Office was demonstrated at the end of last year, when Amazon.com’s application for its 1-Click technology was denied by the Japanese, on the grounds of obviousness.

And the rest of Asia ?

Essentially today there are four models to the patenting of software.

At one end of the spectrum there is the broad approach of the US , a model that has also been adopted by Australia and New Zealand . Secondly, there is the Japanese approach, which looks set to be emulated by South Korea , and possibly Singapore China, Vietnam and Taiwan . Thirdly, there is the European requirement for a technical effect. Finally, in countries like India, Pakistan Malaysia, Indonesia, the Philippines and Thailand software and business methods remain strictly non patentable.

It should be stressed that the situation today remains fluid, with most jurisdictions around the world currently reviewing their current practices in this area.

Moreover, since very few infringement cases related to software and business methods have yet come to the courts, it remains uncertain what the changes might signify.

When Singapore ’s Patents Act came into force in 1995, for instance, it had similar exclusions on software and business methods to those incorporated in the EPC. However, these were subsequently removed on 1st February 1996.

But local patent lawyers believe that since Singapore courts often refer to UK case law, it is quite likely that the courts would nevertheless insist that validity requires demonstrating a technical effect.

Program claims accepted

Another confusion surrounding the patenting of software stems from the long-held assumption that even where a program could be deemed patentable when running in the computer, patent protection did not extend to the program when it was on a

storage device such as a floppy disk. Apart from the logical contradiction this raised, it had implications for proving infringement.

In 1999, however, the EPO Technical Board of Appeal allowed for the first time a patent claim for a program itself, rather than for the program when running in a computer. Assuming, that is, that it meets the technical effect requirement[6].

The Technical Board of Appeal pointed out that if a computer program has the 'potential to produce a technical effect' it should be treated as being as patentable as a claim for the program while running in the computer.

Immediately the UK Patent Office issued a practice note saying that in future it would deal with claims to computer programs too. It pointed out, however, that this did not imply any substantive change to the rules governing the patentability of software.

The Japanese Patent Office also recently revised its examination guidelines. While intended primarily to clarify the situation, the new guidelines have however also introduced the ability to claim a program as a product invention for any applications filed on or after 10^{th} January 2001 — thus harmonising practice with the above change in Europe .

These type of claims have been possible in the US since 1995.

Continuing divergence between the US and Europe

So where from here?

The results of the recent UK consultation exercise suggest that there is strong support for maintaining the *status quo* with regard to the patentability of software. At the same time, however, the current ambiguity over the rules is a cause of considerable confusion, not least because the definition of technical effect is far too obscure for a lay audience. It is also evident that there is little appetite for business method patents in the UK .

Details of the EC consultations are expected to be available by summer 2001, and will be made available at the Commission's Industrial Property web pages at europa.eu.int/comm/internal_market/en/intprop/indprop/index.htm.

It is now expected, therefore, that a Directive will be proposed later in 2001, with which national patent laws in Europe can be aligned. This Directive is likely to see harmonisation of the European rules on the patentability of software and business methods based on the current case law and practice of the EPO.

While membership of the EC and the EPC does not directly overlap[7], it seems likely that any solution arrived at in the EC Directive will be mirrored in changes to the EPC.

This will mean a continuing divergence between the approaches of the US and Europe . Further evidence of this divergence was apparent in a recent ruling by the EPO Board of Appeal[8].

The Board of Appeal supported the examiner's view that a pension scheme implemented by a computer, or system of computers, was not patentable — on the grounds that "the improvement envisaged by the invention according to the [patent] application is an essentially economic one", which could not contribute to an inventive step. The same patent application, however, has been granted in the US .

Nevertheless, US politicians have begun to take a jaundiced view on current US practice over business method patents. Last year US Congressmen Rick Boucher and Howard Berman introduced the *Business Method Patent Improvement Act of 2000.* While the Presidential election ruled out any chance of this succeeding during the 106^{th} Congress, it is widely expected that Boucher and Berman will introduce a similar bill in the 107^{th} Congress.

Even if it succeeded it is expected that any such bill would leave the US some way ahead of both Europe and Japan in terms of the breadth of patentability available for US companies looking to obtain software-related business method patents.

However, there are signs that the US Patent and Trademark Office is beginning to rein back its former enthusiasm, with more applications being rejected on the grounds of obviousness. The number of business method applications granted by the USPTO fell from 67% in 1999, to 37% in 2000 thanks to more stringent examination procedures.

The reality today

Whatever the eventual outcome, and whatever the rights and wrong of the current situation, the reality for UK software companies right now is that software patents are being granted in ever increasing numbers around the world, particularly in the world's largest market.

Concurrently, many foreign companies are successfully obtaining software-related patents in Europe . Already a number of UK software companies have received letters from US, as well as British, competitors demanding royalties on software-related patents. This is only likely to increase.

It is worth re-stating that there are a number of reasons for patenting. Most obviously, companies patent in order to block others from a market, to prevent a third party from using their invention, or as a way of earning revenue by charging royalties for others to use it.

However, patents are also often used for defensive purposes, or to help a company enter a market. You may, for instance, use your patent(s) in order to trade, or cross-license, patents with competitors.

In this way patents can be useful not so much for blocking others from a market, but ensuring that you yourself are able to enter it — by exchanging patent rights with competitors.

As software products become more complex this tendency is likely to increase, and become more important. Already today many software packages tend to incorporate patented technology from a range of different companies, all of whom have cross-licensed different parts of the total product.

The risk is that if you do not have patents yourself you may be at a significant disadvantage when negotiating with patent-rich competitors.

Certainly any UK software company hoping to export its products into US markets should give serious consideration to the advisability of obtaining US patents.

And SMEs in need of funding could find that an absence of patents, or at least patent applications, presents a growing obstacle.

Choosing not to patent

The harsh truth, though, is that today there are no certainties, other than that the rules are in a state of flux, and that they vary from country to country. Companies could, therefore, invest time and money obtaining patents that later prove of dubious value, or that they cannot afford to enforce.

Many companies, for instance, mistakenly believe that it is enough to be granted a patent, only to discover that the costs of defending it in the courts prove prohibitive. Others have found to their horror that in trying to enforce a patent the courts find it be invalid, and revoke it.

Moreover, if a software company is operating in a very niche area — writing, say, bespoke software for a local council — there may not be any value in applying for a patent for inventions arising from that work.

Likewise, seeking patents on small incremental improvements — even where a patent could be available — may not be justified when the costs are factored in, and weighed against the benefits.

And if a company's market is exclusively in the UK , there may be no point in patenting in other countries — unless it is envisaged that there could be licensing opportunities abroad.

Alternatively, you may prefer to take the Open Source route, which has a number of advantages, not least that your products will be able to benefit from the expertise of other programmers, and the likelihood that they will be more stable and effective as a result.

Companies deciding, for whatever reason, not to patent an invention may however be concerned that someone else could patent it, and then seek royalties from them.

This danger can be averted by means of 'defensive publication'. By placing a brief summary of your invention in the public domain you can establish prior art that would bar anyone else from patenting the invention at a later date.

A number of publications now exist specifically for this purpose, including a monthly publication called *Research Disclosure*, and a web-based service called IP.com (www.ip.com). Research disclosures can be (and usually are) published anonymously.

The importance of an IPR strategy

Whatever you decide to do this is an issue that you really should address, be it only to assess the situation and conclude that patents are not relevant to you, or something you would rather avoid.

On the other hand, you may conclude that the risks of *not* patenting are simply too great; or that the potential benefits of earning additional revenue from licensing your technology are too compelling.

The point to stress is that whether you choose to patent or not can only be made in the light of an informed and articulated IPR strategy.

Not only does this mean agreeing a corporate-wide strategy, but also reviewing the options in each of your company's markets, on a case-by-case basis, and then deciding how best to protect your intellectual property in each of those jurisdictions.

Whatever decision you do take will inevitably involve risks. But since this is an issue capable of making or breaking a business, the one thing you should not do is ignore it.

PATENT BASICS

The patent bargain

To obtain a patent on a new technology it is necessary to show that it is new, involves an inventive step, and is capable of industrial application.

Crudely expressed, a patent provides a 20-year monopoly on an invention. As such, the patent holder is given exclusive rights to it. This includes the right to prevent others from making, selling or importing a patented product, using a patented process, or selling or importing products made by means of the patented process.

A patent does not, however, confer any rights on the owner to use the invention, merely the right to stop others from using it, or to seek royalties from those wishing to licence it.

Nor is a patent a one-sided benefit. While it confers a legal monopoly on inventors, they in turn are required to provide full details of how the invention works, which are published such that others can utilise their knowledge. This social 'bargain' is intended to promote innovation and the spread of ideas.

For software developers a key point to bear in mind is that when filing a patent application it is necessary to include full disclosure of the invention, including everything that is needed to carry out the invention.

One possible consequence of this is that you could apply for a patent, have the details of your invention published, and then find that your patent application has been refused — on the grounds of obviousness or lack of novelty for instance.

This differs from using copyright and trade secret protection, where it is often possible to keep details of the technology out of the public domain.

Obtaining a patent

There is no such thing as a world patent. Patent rights are granted by individual countries. Patent applications can be made either at a national patent office, or via a regional patent office such as the European Patent Office.

So while it is possible to obtain patents Europe-wide through the centralised application process of the European Patent Office, separate applications will need to be made in the US, Japan, and any other national office for which protection is desired.

Companies with global ambitions can also use the Geneva-based World Intellectual Property Organisation (WIPO), which covers the more than 100 nations that have signed the Patent Co-operation Treaty (PCT).

Using the PCT route it is possible to file a single international application at one of the national receiving offices, in one language and in accordance with one set of rules, designating those countries for which protection is sought.

However, unlike the EPO, WIPO only registers applications and carries out a preliminary validity search: individual patents need to go through the examination process of each designated country. When the application enters the so-called 'National Phase', up to 30 months after the initial filing, it must be translated into the languages of all the countries where it is hoped to proceed.

The costs of patenting

The costs of patenting will depend on a number of factors, not least the fees charged by a patent attorney. In London , attorneys generally advise clients that, as a rule of thumb, it costs £5,000 per patent, per country, to obtain protection. Usually, there are also renewal fees to pay in order to keep a patent in force, and translation costs where foreign applications are made. The latter can be considerable for Japanese patents.

Additionally, there will be internal manpower costs associated with briefing patent agents and managing the process — which for SMEs may be significant.

It is also important to consider possible litigation costs incurred in asserting a patent. A full trial in the UK today is likely to cost at least £500,000, and could be more than £1 million. In the US this would be more like $1.5m to $3m.

Those choosing not to patent, however, should appreciate that, if they are charged with infringement, they could nevertheless face similar costs fighting a court action. In other words, choosing not to patent does not inevitably mean avoiding patent litigation costs.

Patent searching

One way of avoiding unnecessary infringement lawsuits is to undertake regular patent searching. This will help you to avoid unknowingly using patented technology without a licence.

It also allows you to monitor the activities of your competitors, and can provide advance warning of new products and techniques likely to be introduced in the future — assuming the technology involved has been patented.

You will need to bear in mind, however, that patents are not published until 18 months after they are filed at a patent office — so any patent search will miss recently filed patent applications yet to be published.

Additionally, details of US patents have historically only been published once they are granted. While this was changed in November 2000, applicants can still choose not to have the details published before the patent is granted, where they are applying for US coverage only.

Another advantage to patent searching is that it can alert you to competitor's patent applications that you may wish to oppose. This can be achieved, for instance, by providing the patent office with prior art that would invalidate the patent claim.

There are a number of commercial patent databases that can be searched, although they are generally expensive to use.

Alternatively, many patent offices have begun to make their internal patent databases available over the internet. The UK Patent Office, for instance, provides access to esp@cenet, which contains some 30 million patent documents from around the world.

In addition, a growing number of web-based non-patent databases are becoming available to assist in the search for prior art in the software area. The Software Patent Institute, for instance, provides access to software program manuals, technical reports, journal articles and books generally unavailable from other sources (www.spi.org).

Export issues

Companies planning to export their software may wish to consider seeking patent protection in foreign markets, particularly highly patent-conscious countries like the US and Japan .

However, in those countries where enforcement is known to be difficult, the costs of doing so may be hard to justify. While the situation is improving, a number of Asian economies continue to have a poor record in this area.

In such cases copyright may prove a better defence. While not necessarily obligatory, it may also be advisable to register for copyright in many foreign countries, as this establishes clear evidence of ownership.

The need for specialist help

Obtaining patent protection is a complex and specialist business. For this reason companies should be wary of a 'do-it-yourself' approach. While large companies may employ internal patent attorneys, smaller companies would be advised to seek out the services of a patent agent or other specialist.

Likewise, patent searching is a complex task, and is best done by professional searchers.

Some questions to consider

- In what market(s) do you intend to sell your software product(s)?
- What are you trying to achieve within those markets? What are your goals?
- Would the ownership of software or business method patents help you to achieve those goals in each of those markets?
- How likely is it that you can obtain a software or business method patent in your markets of choice?
- If you do choose to patent, should you patent in all of your markets, some, or none?
- Might you rather be better focusing on copyright, trade mark and trade secret protection, and avoiding the costs — and publicity — of patenting?
- Might you be better taking the Open Source route?

- Have you really created something so innovative that larger players may try to copy you and undercut you, or does it only have a small niche market that other companies are unlikely to pursue?
- Might you be better served simply publishing details of your inventions in a 'research disclosure' publication in order to prevent others from patenting them?
- Might you need to own patents for defensive purposes? Could you, for instance, find yourself blocked from new markets as a result of not possessing the necessary wherewithal to cross-licence with competitors?
- Do you plan to float your company, or expect to need venture capital funding in the future? If so, would the ownership of patents improve your likelihood of success in raising capital?
- If you do obtain a patent are you confident that you have the resources/financial support to successfully assert it?
- If not, should you be considering patent insurance?
- Should you be undertaking regular patent searches to ensure you are not in danger of infringing a competitor's patent?
- Should you be monitoring patent applications with a view to opposing those that you feel are unwarranted?

FURTHER INFORMATION

Web sites

www.patent.gov.uk

UK Patent Office site

www.patent.gov.uk/about/ippd/consultation/closed/index.htm

Details of the UK Patent Office consultation on software patents

http://www.patent.gov.uk/about/consultations/conclusions.htm

The UK Government's conclusions following the above consultation process

www.european-patent-office.org

European Patent Office site

europa.eu.int/comm/internal_market/en/intprop/indprop/softpaten.htm

Details of the EC consultation on software patents

www.uspto.gov

US Patent and Trademark Office site. This includes information on software and business method patents, as well as a full-text searchable database of patent documents

www.jpo.go.jp

Japanese Patent Office site.

gb.espacenet.com

UK gateway site to esp@cenet, providing access to 30 million patent documents world-wide

www.delphion.com

Site of the Delphion Intellectual Property Network (IPN) — an online database of more than 40 million patent documents from around the world

www.spi.org

Site of the Software Patent Institute, including a searchable database of non-patent prior art.

www.ip.com

Site that publishes research disclosure documents.

www.wipo.org

Web site of the World Intellectual Property Organisation. This contains information on the international Patent Co-operation Treaty

www.ipr-helpdesk.org/softpat

Site of the EU-funded IPR-Helpdesk. It includes information on the trend of judicial reasoning in Europe, and compares the situation in the US and Japan .

www.eurolinux.org

A European site devoted to Open Source issues, and actively agitating against software patents in Europe

swpat.ffii.org/indexen.html

Software patent section of the Federation for a Free Informational Infrastructure

www.cipa.org.uk

Site of the Chartered Institute of Patent Agents. It includes advice on patenting and how to find a patent agent

Articles

It may be good business. It's Patently Not Science, *The Observer*, March 18th 2001

Software Patents in Europe ?, David Marchese, *Channel Business*, September 2000

The Tug-of-War that's Making Lawyers Rich, Graham Lea, *Microscope, 7th November 2000*

Business Method Inventions: Patentable as Such?, Justin Lambert, *E-Commerce.Domain Names*, September 2000

The Politics of Plagiarism, Jean Eaglesham, *Financial Times*, November 17th, 2000

Patents Wearing Thin with Software Rights Monopoly, Grania Langdon-Down, *The Times*, November 21st 2000

Software and Business Methods are Patentable in the US (Get over it), Peter Toren, *Patent World*, September 2000

Amazon's Patently Unique Association of Online Ideas, Tim Jackson, *Financial Times*, 14 November 2000

Europe 's 'Me-too' Patent Law, Lawrence Lessig, *Financial Times,* July 11th 2000

Patent Approach Pays Off, Christopher Price, *Financial Times*, 25th July 2000

Using Monopolies to Protect Methodologies, Jean Eaglesham, *Financial Times*, October 26th 2000

Financial Sector Plays Catch-up in Patent Game, Asako Ishibashi, *The Nikkei Weekly*, 19th June 2000

Applying the Rulebook of Patenting, David Kappos, *IP Asia,* September 2000

Books

Inventing Software, Kenneth Nichols, Quorum, 1998

Patents Wars, Fred Warshofky, John Wiley & Sons, 1994

Caught in a Web, Edited by Richard Poynder , Derwent Information, 2001

Rembrandts in the Attic, Kevin Rivette & David Kline, Harvard Business School Press, 1999

Hidden Value, Edited by Richard Poynder , Derwent Information, 1999

Owning the Future, Seth Shulman, Houghton Mifflin Company, 1999

Two specialist books that may be of interest

Patenting Software Under the European Patent Convention, Keith Beresford, Sweet & Maxwell, 2000

Software Patents, Gregory Stobbs, Aspen Publishers, 2000

Guides

Your Software and How to Protect it, European Commission, 2001

Intellectual Property Rights in Software, The British Computer Society, 2000

Reports

First Mover Monopoly, Olswang & Partners, 2000

The Economic Impact of Patentability of Computer Programs, Report to the European Commission, Intellectual Property Institute, 2000

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[1] *Diamond v. Diehr 450 US 175,209 USPQ 1 (1981)*

[2] *State Street Bank & Trust Co v. Signature Financial Group Inc*. 149 F.3d 1368, 47 USPQ2d 1596 (Fed. Cir. 1998)

[3] At present the EPC Member States comprise the EU Member States plus five others: Switzerland , Monaco , Liechtenstein , Cyprus and Turkey .

[4] Interestingly, under the previous Patents Act 1949 software was considered patentable in the UK , since an invention was defined as “any manner of new manufacture”.

[5] T 208/84

[6] T 0935/97 and T 1173/97

[7] See note 3 above

[8] T 0931/95

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